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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/981,712	10/19/2001	Yukio Morishige	016778-0437	6064
22428	7590	05/17/2004	EXAMINER	
FOLEY AND LARDNER SUITE 500 3000 K STREET NW WASHINGTON, DC 20007			HASSANZADEH, PARVIZ	
			ART UNIT	PAPER NUMBER
			1763	

DATE MAILED: 05/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/981,712

Applicant(s)

MORISHIGE ET AL.

Examiner

Parviz Hassanzadeh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 March 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 1-5 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 6-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 October 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of Group II, apparatus claims 6-12, in Paper No. 10/31/03 is acknowledged. The traversal is on the ground(s) that the features of the newly amended independent apparatus claim 6 are very similar to the features of independent method claim 1. This is not found persuasive because the method can be performed by an apparatus not requiring a gas window. *The requirement is still deemed proper and is therefore made FINAL.*

Claims 1-5 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected method, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in Paper No. 10/31/03.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 6, 10-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morishige (JP 10-324973-A) in view of Ninomiya et al (JP 61-279690-A) and Yoshino (JP 63-036249-A).

Morishige teaches a device (Fig. 2) for correcting defects of pattern film on a surface of a substrate 6, the device comprising:

a holder 18 for holding the substrate 6;

a laser irradiator 14 for irradiating laser light at a white defect on the surface of the substrate 6;

a gas window 10 (Fig. 1) for blowing material gas, via nozzles 7 and 8, on the surface of the substrate and conducting laser light from the laser source through the window 9 of the window 10 to the white defect in order to form pattern film over the white defect.

Morishige fails to teach a holder for holding a substrate with the surface facing downward.

Ninomiya et al teach a surface treatment device wherein a wafer 5 is held by a wafer holder 19 with surface facing downward so that resultant reaction product does not fall on the surface of the wafer (Fig. 3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to implement the substrate holder as taught by Ninomiya et al in the apparatus of Morishige in order to prevent falling reaction products on the surface of the substrate.

Morishige also fails to teach the laser irradiator 14 comprising a first laser source and a second laser source.

Yoshino teaches a device for continuously correcting white and black defects (Fig. 2), the device comprising a laser irradiator 3 wherein the laser light (1.06 micron) after being converted into a second harmonic frequency at stage 4 passes into a processing chamber 22 using beam splitter 33 and mirror 34 as shown in Fig. 2 for correcting black defects. The laser light is further converted into higher frequency at stages 5 and 6 and directed into the chamber 22 by a mirror 7 for correcting white defects.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to implement the light source mechanism as taught by Yoshino in the apparatus of Morishige in order to continuously and rapidly correct white and black defects using two direct light radiation energies.

Further regarding claims 6 and 10: the light from the laser source 3 of Yoshino is converted and split into two light beams with different frequencies appropriate for correcting white and black defects. The use of a first laser source for correcting white defect and a second laser source for correcting black defect is considered as art recognized equivalent mechanism of providing two light beams with different frequencies appropriated for correcting white and black defects. See MPEP 2144.06, Art Recognized Equivalent for the Same Purpose, Substituting Equivalents Known for the Same Purpose (in re Fout, 675 F.2d 297, 213 USPQ 532 (CCPA 1982)).

Further regarding claim 11, 13-20: the gas window of Morishige include nozzles 7 and 8 for introducing purge gas and carrier gas as shown in Fig. 1. furthermore, the claimed gas window is an obvious modification of the gas window of Fig. 1 of Morishige.

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Further regarding claim 12: the wafer holder 19 is coupled to sucking unit 15 as shown in Fig. 3 of Ninomiya et al.

Claims 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morishige (JP 10-324973-A) in view of Ninomiya et al (JP 61-279690-A) and Yoshino (JP 63-036249-A) as applied to claims 6, 10-20 above, and further in view of Okamoto et al (US Patent No. 4,628,531).

Morishige in view of Ninomiya et al teach all limitations of the claims as discussed above except for an optical unit for observing pattern film on substrate, wherein a penetrating light source having a lens irradiates light through the lower surface of the substrate.

Okamoto et al teaches a pattern checking apparatus (Fig. 3) including an illuminating light source 13A and a condenser lens 13B irradiating light through lower surface a substrate mask 11, and a microscope 13C and an image pickup unit 14A for detection of defects on the patterned substrate (abstract; column 1, lines 4-9; and column 3, lines 20-62).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to employ the pattern checking apparatus as taught by Okamoto et al in the apparatus of Morishige in view of Ninomiya et al in order to detect defects on the patterned substrate.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kawamura (JP 5-259247-A) teaches a wafer stage designed to suck a wafer so that it faces downward in order to reduce black defects on the wafer;

Fukazawa (JP 3-104869-A) teaches a laser CVD apparatus wherein a substrate is held so that it faces downward facing a laser beam;

Maurer (US Patent No. 5,634,230) teaches a system including an inspection device and a microscopic-particle removing device.

Response to Arguments

Applicant's arguments with respect to claim 6 have been considered but are moot in view of the new ground(s) of rejection.

The applicants assert that non of the references teaches the use of laser for correction both white and black defects in the same process chamber. The Examiner has relied upon Yoshino (a prior art provided previously by the Applicants) teaching laser for correcting both white and black defects in the same process chamber.

The Applicants also assert that the newly submitted claims gas reciting features of the window of Fig. 2 is also patentable. The Examiner argues the gas window of Fig. 2 of the Applicant is an obvious modification of the gas window of Fig. 1 of Morishige.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

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CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Parviz Hassanzadeh whose telephone number is (571)272-1435. The examiner can normally be reached on Tuesday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on (571)272-1439. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

P. Hassanzadeh
Parviz Hassanzadeh
Primary Examiner
Art Unit 1763

May 13, 2004